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ABSTRACT

The author proposes a framework for the study of behavior and personality that takes into account phylogeny (development of genetically related groups of organisms) as well as ontogeny (course of development of an individual organism). The adaptive function of behavior is stressed. The author states that individual personality is a unique variation of a basic hominid theme which must be understood in order to understand the individual variations. For example, smiling is an evolved mechanism with an obviously adapted function and is, therefore, a standard unit of behavior. Yet when smiling is interwoven with an individual pattern of behavior the end result is a unique, individually evolved personality structure. The author maintains that research should strive to understand individual personality in terms of man's evolutionary nature. (RWP)

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An Evolutionary Framework For Behavioral Research

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An Evolutionary Framework for Behavioral Research*

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I have been impressed that behavior geneticists have a gimmick rather than a theory. We feel superior to the rest of psychology because we know that in diploid organisms individual differences are largely due to genetic variation, and we continue to push this point wherever we can. This has served the purpose of upsetting an applecart, and strict environmentalism is now passe; but aside from this heuristic value to our work, we seem to be in the same boat as anyone else. Up the creek without an overall guiding theory.

Let me begin with my own case history. Starting as a clinical psychologist with a strong Gestalt-holistic bias, my Ph.D. thesis revealed to me, in a very dramatic way, and not by design, the importance of genotype. In this study I reared different breeds of dogs in two ways, hoping to prove a "purely" psychological hypothesis (Freedman, 1958). Instead, I came away with striking breed-by-environment interactions, and I have been obsessed with such interactions ever since. Following this thesis, I began to look to geneticists for research leads. I visited Kopec, for example, at N.Y.U. with the notion of doing chromosome surgery on hamsters, and relating this to behavior. It turns out that this is a perfectly possible thing to

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try. I then spent a year at the Institute for Medical Genetics in Uppsala where, among other things, the world of biochemical genetics was opened to me.

But whenever I became bored with reading and decided to do some work, I found myself involved in psychotherapy of twins or studying babies (e.g., twins, blind babies, Mongoloid babies), or in some way dealing with humans very much as I had done as a clinician. I obviously still preferred to work with my subjects over a substantial period of time and via a developing relationship.

But something new had been added. On the basis of my new interest in genetics I had become an evolutionist and the notion of adaptive fundtion began filling my brain. In the arena of animal behavior, for example, it no longer concerned me, as it does so many animal psychologists, whether imprinting was traditional learning as opposed to a special kind of learning. It was clear that in the ground-nesting mallard, unless ducklings pursued Mama into the pond soon after hatching, the last mallard would have been eaten long ago. Imprinting is obviously something that has appeared under strong pressure of predators, and as Lorenz has said to those using barnyard chicks, "If you're going to study imprinting, study it in birds that imprint."

(Parenthetically, I prefer not to use the terms "innate" and "acquired," and instead I've found the simpler term "evolved behavior" much more congenial. Imprinting obviously involves both innate and acquired elements, and rather than get lost in a make-believe partitioning of these elements, I prefer to use the subsuming term, "evolved.")

We may now ask, what does this evolutionary thinking do for personality theory? Let me give examples. Some of you know of my interest in the human smile and fear of strangers (Freedman, 1965), and that I view these behaviors as evolved adaptations. In the meetings three years ago I presented data, since corroborated by further work, that these behaviors are significantly more concordant in identical twin infants than in same-sexed fraternals. Let me elaborate my thinking about that.

One of the most important things that occurs within any social species is the development of social bonds in the neonatal period. In man this process is the most prolonged and probably the most complex (Bowlby, 1958). The formation of these attachments is only meaningful in light of the species' total adaptation, and in man the relationship between attachments and later obedience, conscience, and teachability, to give examples, is not hard to see (Hoffman, 1963).

Given these notions as a premise, it has become clear to me that the baby's smile is meaningless without a sympathetic recipient or participant in that smile. Although my teacher, Kurt Goldstein, wrote this ten years ago (Goldstein, 1957), it has only recently taken on an evolutionary meaning for me. I now see that many evolved behavioral mechanisms in the infant have counterpart reactions in the caretaking adult.

For example, we will probably all agree that crying is an evolved mechanism, and most newborn mammals, when out of the nest, start to cry. In dogs, one has only to watch the bitch's excited seeking to realize that her's

is an evolved mechanism complementary to the pup's cry. In the human, similarly, it can be demonstrated that within hours after birth a crying infant will quiet when held and carried. Consider how this cessation of crying co-ordinates beautifully with the intense anxiety felt by the human parent until the infant is quieted. In this way the human baby does about as well as the macaque in getting next to the parent without having the ability to cling.

Let's consider, further, the infant's persistent searching for the face of adults at two months, and the wave of love the adult feels as eyes meet and the first smiles ensue. These waves of love in the adult are data, too! (Many of you probably know that the infant smiles most readily at the full face view of the adult, and that turning one's profile is like turning off a switch: the smile disappears and baby searches with its eyes at about the level of your ear. Additionally, there is considerable evidence, still largely unpublished, that babies prefer to look at models of the face over various other competing configurations. (See, for example, Fantz, 1961)

A few weeks after smiling starts, the infant begins to coo at the beholding adult--try not to coo back at a vocalizing baby (as we have to do as experimenters) and see how unnatural it feels. The infant is now "talking" and we feel the irresistible urge to respond. I have little doubt but that these species-specific mutualities are the stuff social bonds are made of.

Consider further the clocking-in of laughter at about four months and the joy it gives us. Now the baby and caretaker can indulge in genuine mutual play; is there any reason to hold that the joy the adult feels is less of a mechanism than the laughter of the baby? As the first year progresses, a fear of

strangers appears which draws the infant and caretaker even closer; by the time imitation and the first use of words start, late in the first year, social bonds are very strong and the child is an integral part of the lives of those about him.

I've thought most about infant-adult interactions but evolved mechanisms are at work in all aspects of man's behavior. A particularly clear example to explore is man's constant engagement in dominance-submission testing, particularly among males (as in other primate species). At about four years of age one can see the competitive interplay in any nursery school, particularly among the boys, and when the same behavior is tried out at home we have in the past preferred to call it the Oedipus complex. It starts at about four and try as we might not to engage in it, no matter what culture we are reared in, this behavior always characterizes a human group. Reconstruction of the social order of our progenitor, Australopithecus, suggests they lived as groups of hunters, and the establishment of dominance-submission hierarchies, since they lead to dynamically stabilized groups, still suits us well.

The major point to this present audience is that paper and pencil tests given to twins will not in themselves reveal the processes of evolution. One has to look through evolutionary glasses to find the meaningful units of behavior. For a personality theoriest this is a view of people who often act in mutual concert or discord, and who are built to send and receive cues in the service of various evolved behaviors; it will require some ingenuity to decide on the proper units and to put these to a meaningful test.

Let me give two examples of proposed and ongoing studies which appear to follow from the above development. Since we hypothesized that the baby's cry and the adult's need to do something about it are complementary inherited mechanisms, let us set up the following experiment. A tape of a baby's cry is played and adult subjects are hooked up to an EKG apparatus so that various autonomic measures can be taken. Control sounds would be used, and the previous experience of the subjects might be systematically varied. Also, why not use twins?

As the second example, we are now studying infant twins with regard to the details of developing social responses. Starting in the hospital at delivery, we follow our subjects week by week through four months and note the development of the things we have been talking about: we study eyes-closed smiling, the amount and intensity of following with the eyes, the timing of eyes-to-eyes fixation, the onset of early social smiling, the intensity and extent of cooing, and the timing and ease of eliciting laughter. Briefly, we have been finding that fraternal pairs are substantially different on these measures and that identical pairs are substantially alike. We have found that identicals differ considerably in the onset of these behaviors, so that what A is doing one week, B is doing the next. Nevertheless, the overall patterns are far more alike than in the fraternals, where both timing and patterning are substantially unalike.

As a final word, I should like to offer an evolutionary definition of personality. It actually derives from our work with twins, some of whom we

have now followed from birth through five years. We have never had trouble describing the nuances of personality in fraternal individuals, but it is near impossible to speak about identical individuals with the same rich detail. A little introspection revealed why. Personality amounts to an individual's unique variation on the basic hominid theme. Just as all of our evolved structures are standard, yet variable, the same holds for evolved behavior. This is what gives us our individuality and that is the trouble we have in describing a single identical child; the fact that we know a second individual whose variation is so very much the same confuses and tongue-ties us. The way to solve this, of course, is to have each identical twin seen by an independent investigator, and that is what we are now doing.

In closing, I hope the point is clear that if psychologists continue to focus on the individual, the self, personality, or any other ontogenetically limited concept, they will be committing a major mistake. It strikes me as a safe prediction that most correlations obtained with twin studies will dry and blow away with time, and only those that attain comprehensibility in the light of our evolved nature will remain.

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